

WHAT IS CLAIMED IS:

1. Glass comprising:

Ingredient	wt. %
SiO ₂	67 – 75 %
Na ₂ O	10 – 20 %
CaO	5 – 15 %
MgO	0 – 5 %
Al ₂ O ₃	0 – 5 %
K ₂ O	0 – 5 %
total iron (expressed as Fe ₂ O ₃)	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %
cerium oxide	0.005 to 0.30 %

wherein the glass has visible transmission of at least 75%, a transmissive a* color value of -1.0 to +1.0, and a transmissive b* color value of -1.0 to +1.5.

2. The glass of claim 1, wherein the glass comprises:

total iron (expressed as Fe ₂ O ₃)	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %
cerium oxide	0.01 to 0.18 %.

3. The glass of claim 2, wherein the glass comprises:

total iron (expressed as Fe ₂ O ₃)	0.03 to 0.15 %
erbium oxide	0.03 to 0.13 %
cerium oxide	0.03 to 0.12 %.

4. The glass of claim 1, wherein the glass further comprises from 0.005 to 0.15% neodymium oxide.
5. The glass of claim 4, wherein the glass further comprises from 0.010 to 0.050% neodymium oxide.
6. The glass of claim 1, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) \leq 0.20.
7. The glass of claim 1, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) \leq 0.15.
8. The glass of claim 1, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) \leq 0.13.
9. The glass of claim 1, wherein the glass further comprises less than or equal to 0.020 % FeO.
10. The glass of claim 1, wherein the glass further comprises less than or equal to 0.015 % FeO.
11. The glass of claim 1, wherein the glass further comprises less than or equal to 0.011 % FeO.
12. The glass of claim 1, wherein the glass has a visible transmission of at least 80%.

13. The glass of claim 1, wherein the glass has a visible transmission of at least 85%.

14. A method of making glass, the method comprising:
providing a glass batch comprising:

Ingredient	wt. %
SiO ₂	67 – 75 %
Na ₂ O	10 – 20 %
CaO	5 – 15 %
MgO	0 – 5 %
Al ₂ O ₃	0 – 5 %
K ₂ O	0 – 5 %
total iron (expressed as Fe ₂ O ₃)	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %
cerium oxide and/or a nitrate	0.005 to 2.0 %
neodymium oxide	0 to 0.15 %

melting the batch and forming a resulting glass that has visible transmission of at least 75%, a transmissive a* color value of -1.0 to +1.0, and a transmissive b* color value of -1.0 to +1.5.

15. The method of claim 14, wherein the nitrate comprises at least one of potassium nitrate (KNO₃) and sodium nitrate (NaNO₃), and the batch comprises:

total iron (expressed as Fe ₂ O ₃)	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %

cerium oxide	0.01 to 0.18 %
neodymium oxide	0 to 0.15 %.

16. The method of claim 14, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.20 .

17. The method of claim 14, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.15 .

18. The method of claim 14, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.13 .

19. The method of claim 14, wherein after the melting the glass comprises less than or equal to 0.020 % FeO.

20. The method of claim 19, wherein the glass comprises less than or equal to 0.015 % FeO.

21. The method of claim 20, wherein the glass comprises less than or equal to 0.011 % FeO.

22. The method of claim 14, wherein the glass has a visible transmission of at least 80%.

23. Glass comprising:

total iron (expressed as Fe_2O_3)	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %
cerium oxide	0.005 to 0.30 %.

24. The glass of claim 23, wherein the glass has visible transmission of at least 75%, a transmissive a^* color value of -1.0 to $+1.0$, and a transmissive b^* color value of -1.0 to $+1.5$.

25. The glass of claim 23, wherein the glass comprises:

total iron (expressed as Fe_2O_3)	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %
cerium oxide	0.01 to 0.18 %.

26. The glass of claim 23, wherein the glass comprises:

total iron (expressed as Fe_2O_3)	0.03 to 0.15 %
erbium oxide	0.03 to 0.13 %
cerium oxide	0.03 to 0.12 %.

27. The glass of claim 23, wherein the glass further comprises from 0.005 to 0.15% neodymium oxide.

28. The glass of claim 23, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.15 .

29. The glass of claim 23, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.13 .

30. The glass of claim 23, wherein the glass further comprises less than or equal to 0.015 % FeO .

31. The glass of claim 23, wherein the glass has a visible transmission of at least 85%.

32. A method of making glass, the method comprising providing a glass batch comprising:

total iron (expressed as Fe_2O_3):	0.01 to 0.30 %
erbium oxide:	0.01 to 0.30 %
cerium oxide and/or a nitrate:	0.005 to 2.0 %, and

using the glass batch to make glass.

33. The method of claim 32, wherein the batch comprises a nitrate in the amount (wt. %) of from 0.005 to 2.0%.

34. The method of claim 33, wherein the nitrate comprises at least one of potassium nitrate (KNO_3) and sodium nitrate (NaNO_3).

35. The method of claim 34, wherein the batch comprises at least one of potassium nitrate (KNO_3) and sodium nitrate (NaNO_3) in a total amount of from 0.2 to 1.5%.

36. The method of claim 32, wherein the glass has visible transmission of at least 75%, a transmissive a^* color value of -1.0 to $+1.0$, and a transmissive b^* color value of -1.0 to $+1.5$.

37. The method of claim 32, wherein the glass comprises:

total iron (expressed as Fe_2O_3)	0.02 to 0.20 %
--	----------------

erbium oxide	0.02 to 0.20 %
cerium oxide	0.01 to 0.18 %.

38. The method of claim 32, wherein the glass comprises:

total iron (expressed as Fe_2O_3)	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %
neodymium oxide	0 to 0.15 %.

39. The method of claim 32, wherein glass comprises from 0.005 to 0.15% neodymium oxide.

40. The method of claim 32, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.15 .

41. The method of claim 32, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.13 .

42. The method of claim 32, wherein the glass further comprises less than or equal to 0.015 % FeO.

43. The method of claim 32, wherein the glass has a visible transmission of at least 85%.

44. Glass comprising:

total iron (expressed as Fe_2O_3)	0.01 to 0.30 %
erbium oxide	0.01 to 0.30 %.

45. The glass of claim 44, further comprising:
- | | |
|--|-----------------|
| total iron (expressed as Fe_2O_3) | 0.02 to 0.20 % |
| erbium oxide | 0.02 to 0.20 %. |
46. The glass of claim 44, further comprising:
- | | |
|--|-----------------|
| total iron (expressed as Fe_2O_3) | 0.03 to 0.15 % |
| erbium oxide | 0.03 to 0.13 %. |
47. The glass of claim 44, further comprising from 0.005 to 0.15 % neodymium oxide.
48. The glass of claim 44, further comprising from 0.010 to 0.050 % neodymium oxide.
49. The glass of claim 44, further comprising from 0.005 to 0.30% cerium oxide.
50. The glass of claim 44, wherein the glass has visible transmission of at least 75%, a transmissive a^* color value of -1.0 to $+1.0$, and a transmissive b^* color value of -1.0 to $+1.5$.
51. The glass of claim 50, wherein the glass has a visible transmission of at least 85%.
52. The glass of claim 44, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.15 .

53. The glass of claim 44, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.13 .

54. The glass of claim 44, wherein the glass further comprises less than or equal to 0.015 % FeO.

55. The glass of claim 44, further comprising:

SiO_2	67 – 75 %
Na_2O	10 – 20 %
CaO	5 – 15 %
MgO	0 – 5 %
Al_2O_3	0 – 5 %
K_2O	0 – 5 %.

56. Glass comprising:

neodymium oxide	0.005 to 0.15%, and
erbium oxide	0.01 to 0.30 %.

57. The glass of claim 56, further comprising:

total iron (expressed as Fe_2O_3)	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %.

58. The glass of claim 56, further comprising from 0.005 to 0.30% cerium oxide.

59. The glass of claim 56, wherein the glass has visible transmission of at least 75%.

60. The glass of claim 59, wherein the glass has a transmissive a^* color value of -1.0 to $+1.0$, and a transmissive b^* color value of -1.0 to $+1.5$.

61. The glass of claim 56, wherein the glass has a visible transmission of at least 85%.

62. The glass of claim 57, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.15 .

63. Glass comprising:

total iron (expressed as Fe_2O_3)	0.01 to 0.30 %
neodymium oxide	0.005 to 0.15 %.

64. The glass of claim 63, further comprising

total iron (expressed as Fe_2O_3)	0.02 to 0.20 %
erbium oxide	0.02 to 0.20 %.

65. The glass of claim 63, further comprising from 0.005 to 0.30% cerium oxide.

66. The glass of claim 63, wherein the glass has visible transmission of at least 75%, a transmissive a^* color value of -1.0 to $+1.0$, and a transmissive b^* color value of -1.0 to $+1.5$.

67. The glass of claim 63, wherein the glass has a visible transmission of at least 85%.

68. The glass of claim 63, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.15 .
69. The glass of claim 63, wherein the glass further comprises less than or equal to 0.015 % FeO.
70. The glass of claim 63, further comprising:
- | | |
|-------------------------|-----------|
| SiO_2 | 67 – 75 % |
| Na_2O | 10 – 20 % |
| CaO | 5 – 15 % |
| MgO | 0 – 5 % |
| Al_2O_3 | 0 – 5 % |
| K_2O | 0 – 5 %. |
71. The glass of claim 1, wherein the glass has a visible transmission of at least 90% when having a reference thickness of from 5.5 to 5.6 mm.
72. The glass of claim 23, wherein the glass has a visible transmission of at least 90% when having a reference thickness of from 5.5 to 5.6 mm.
73. The glass of claim 44, wherein the glass has a visible transmission of at least 90% when having a reference thickness of from 5.5 to 5.6 mm.
74. Glass comprising:
- | | |
|--|----------------|
| total iron (expressed as Fe_2O_3) | 0.01 to 0.10 % |
| cerium oxide | 0.01 to 0.18 % |
- wherein the glass has a visible transmission of at least 85%, a transmissive a^* color value of -1.0 to $+1.0$, and a transmissive b^* color value of -1.0 to $+1.5$.

75. The glass of claim 74, wherein the glass has a redox value ($\text{FeO}/\text{Fe}_2\text{O}_3$) ≤ 0.15 .
76. The glass of claim 74, further comprising from 0.02 to 0.20 % erbium oxide.
77. The glass of claim 74, wherein the glass was made using a batch comprising from 0.005 to 2.0 % of nitrate.
78. The glass of claim 77, wherein the nitrate comprises NaNO_3 .